

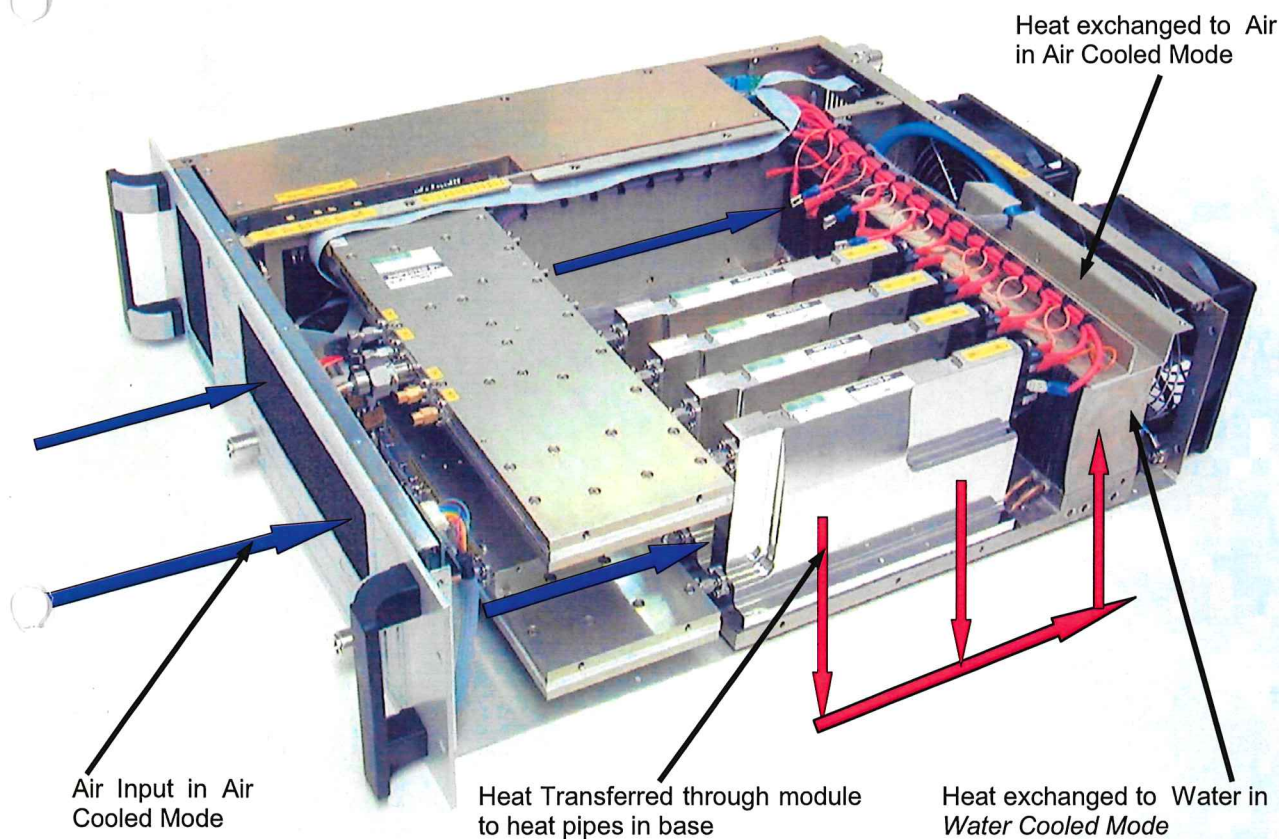
The Milmega Series 2000 Water Cooled Solid State Microwave Amplifiers

The Milmega Series 2000 *Water Cooled* Amplifiers offer an innovative enhancement to the established range of air cooled models. In addition to sharing the award winning architecture, they also share the same unique features and benefits.

All current models may now be ordered with a *Water Cooling* option. The *Water Cooled* models may be operated in "Water Cooled", "Air Cooled" or "Air and Water Cooled" modes.



Cooling at rates $> 700W$ is achieved using 2 litres of water/min which ensure minimum heat build up in the laboratory environment



"Water Cooled" Features

- Innovative use of embedded heat pipe technology for superior Water/Air heat transfer
- Modules redesigned for heat passage to base
- Heat pipes embedded in base for super fast heat transfer to built in Water heat exchanger
- Very thin fins at the rear of unit maximise surface area, 0.75mm thick
- Water cooling kept at rear away from electronics
- 100% air backup in case of primary coolant failure
- Highest Power Density available on the market today

GHz

10GHz

8

6

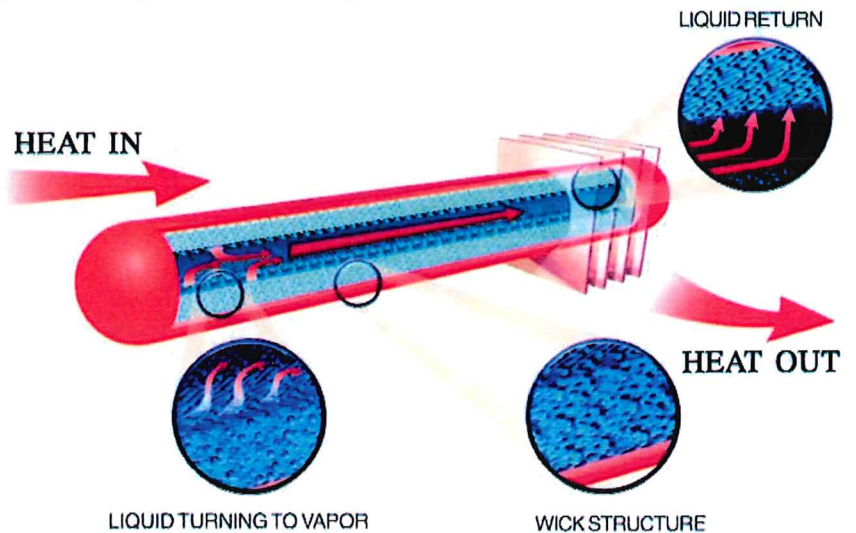
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2

1GHz

Heat Pipe Technology (Image and description courtesy of Thermacore Inc.)

A heat pipe consists of a vacuum tight envelope, a wick structure and a working fluid. The heat pipe is evacuated and then back-filled with a small quantity of working fluid, just enough to saturate the wick. The atmosphere inside the heat pipe is set by an equilibrium of liquid and vapour. As heat enters at the evaporator, this equilibrium is upset generating vapour at a slightly higher pressure. This higher pressure vapour travels to the condenser end where the slightly lower temperatures cause the vapour to condense giving up its latent heat of vaporization. The condensed fluid is then pumped back to the evaporator by the capillary forces developed in the wick structure. This continuous cycle transfers large quantities of heat with very low thermal gradients. A heat pipe's operation is passive being driven only by the heat that is transferred. This passive operation results in high reliability and long life.



Quick Release Couplers

Technical Description

The Rectus 25 KB series, designed specifically for liquid mediums, is a double shut-off version. The valves in the coupling and the plug are opened when connected. Both valves close virtually simultaneously when disconnected, ensuring minimum leakage frost.

Advantages

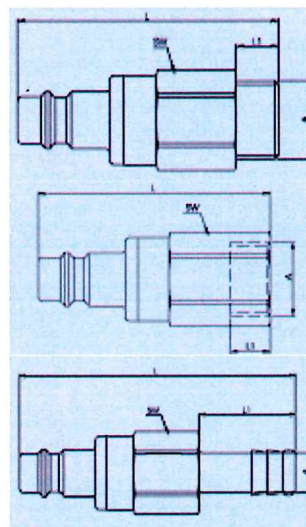
Single handed operation (the sleeve does not have to be pushed back when being connected), all individual parts are made of non-rusting materials, smooth operation due to the ball locking system.

Working Pressure

PB = 35 bar, maximum static working pressure with safety factor of 4 to 1.

Working Temperature

-20°C up to +100°C



Series 2000 Standard Features

High Visibility Status and Power Indicators

- Series 2000 incorporate COLOR LED BAR GRAPH DISPLAYS on the front panel, giving an indication of incident and reflected power.

Built-In Protection

- In the event of temperature exceeding 70°C, the amplifier blocks would automatically be switched off to avoid damage.
- Will withstand 100% reflected RF Power indefinitely.
- Unit incorporates a rear panel mounted connector for interlock, BR2-female.

Bench Mountable

- 3U high units have bench case options.

Easily Rack Mounted

- Dimensions of amplifiers are 133mm (3U) high x 483mm (19 inch) wide x 544mm deep and may be stacked in rack mount form to build higher power amplifiers.

Warranty

- 2 year warranty on all series 2000 parts and components. Extendable to 3,4 or 5 years.

Extensive Options list includes

- IEEE/RS232 Option enables complete remote control of the amplifier. (Option 1)
- Bench case. (Option 22)
- Sample ports.
- (*) 110V Supply for High Power Models. (option 26)

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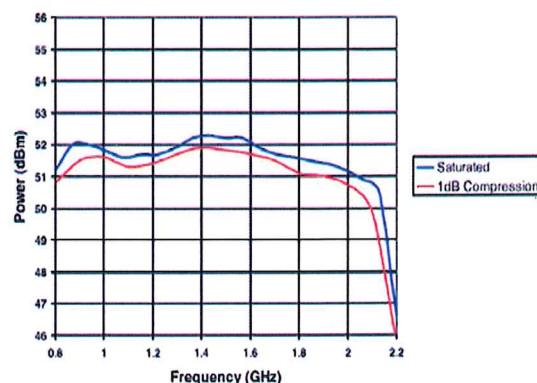
The MILMEGA Series 2000 Broadband Class A Solid State Microwave Amplifier Range

The MILMEGA Series 2000 1.0 GHz-2.0 GHz broadband amplifiers have an award winning innovative design which implements the latest GaAs FET and MMIC technologies. This provides an architecture with unique features and benefits which differentiate Series 2000 from other solid state amplifiers, permitting an impressive array of input/output and sample port options and cost-effective power or bandwidth upgrades.

AS0102-100, 100Watt 1.0 GHz-2.0 GHz Broadband Amplifier

Psat (min):	115 W	Power consumption:	1000 W
Psat (min):	50.6 dBm	Primary Power:	100-260 V (50/60 Hz)
P1dB (min):	102 W	RF Input:	Type N female
P1dB (min):	50.1 dBm	RF Output:	Type N female
Noise figure (max):	6.0 dB	Weight:	10 kg
Gain variation:	± 1.0 dB	Size:	3U
Harmonic distortion (max):	-20 dBc		

Note: The above standard model is available in high power variants. Please contact factory for details.



Class leading linearity and noise specifications

- Gain variation with temperature <0.06 dB/°C
- IP3 typically 10 dB> P1 dB
- Harmonics –20 dBc min
- Spurious (max) –70dBc
- Spurious (typical) –80 dBc

Max power

- Unbeatable power density
- Series 2000 will maintain full forward power into any load condition
- Combiner/coupler integration as standard allows samples of incident and reflected power to be measured with virtually no loss
- 100% tested into short and open circuit
- Up to 250 watts in a single 3U unit
- Consistent over greater than octave bandwidths
- Broadband CW power output to 1 kW

High visibility status and power indicators

- Series 2000 incorporate colour led bar graph displays on the front panel giving an indication of incident and reflected power

Other standard features

- 15 way rear mounted D-type allowing remote operation via TTL commands whilst providing access to an output signal sample
- All data is measured at 25 °C driven from a 50 W source and driving into a 50 W load
- Input power (for rated output) 5 dBm
- Input power (no damage) 15 dBm
- Input VSWR (impedance 50 Ohm nominal) 2:1 max
- Output VSWR (impedance 50 Ohm nominal) 2:1 typical
- Load VSWR (any phase) is infinite
- Line input frequency 47-65 Hz
- Operating temperature (ambient air) 0 to 40 °C
- Storage temperature -40 to 70 °C.

Built-in protection

- In the event of internal temperature exceeding 70 °C, the amplifier blocks will automatically switch off to avoid damage
- Unit incorporates a rear panel mounted connector for interlock BR2-female

Easily rack mounted

- Amplifiers are standard 3U high units and may be combined in rack mounted form to build higher power amplifiers

Bench models

- 3U high units have bench case options

Warranty

- 5 year parts and labour warranty on all Series 2000 amplifiers

Other amplifiers available in the 1.0-2.0 GHz range:

- AS0102-1L – 1 watt lab unit
- AS0102-8L – 8 watt
- AS0102-30L – 30 watt lab unit
- AS0102-30 – 30 watt
- AS0102-55 – 55 watt
- AS0102-200 – 200 watt
- AS0102-250 – 250 watt
- AS0102-400 – 400 watt
- AS0102-800 – 800 watt
- AS0102-1000 – 1000 watt